

1896. Duggar, B. N. On a bacterial disease of the squash-bug. Bull. Ill. State Lab. Nat. Hist. No. IV, pp. 340-379; plates 26-28.
1905. Sawamura, S. On the large bacillus observed in flacherie. Bull. of the Coll. of Agri., Tokyo Imperial Univ., Vol. VI, No. 4; pp. 375-386.
1906. Sawamura, S. Note on the bacteria pathogenic to silkworms. Bull. of the Coll. of Agri., Tokyo Imperial Univ., Vol. VII; No. 1, p. 1.
1907. Mercier, L. Recherches sur les bactéroïdes des Blattides. Archiv. f. Protistenkunde, Bd. IX, S. 346-356; plates 12 and 13.
1911. Berliner, E. The "Schlafsucht" of the meal moth caterpillar. Zeitschr. gesammte Getreidw., Bd. III, No. 3, S. 63-70.
1911. Metalnikov, S. Concerning bacterial diseases of the bee-moth. Zeitschr. Wiss. Insektenbiol., Bd. VII, N. 5-6, S. 178-181. Reference in the Experiment Sta. Record Vol. XXVI, No. 3.
1912. Berliner, E. Die "Schlafsucht" der Mehlwurmmotte. Zeitschr. f. das gesammte Getreidew. (Referate aus Zeitschr. f. Wiss. Insektenbiol., Bd. VIII, Heft 5, S. 191-192.)
1913. Picard and Blanc. Sur une Septicémie des chenilles d'*Arctia caja* L. Comptes Rendus des Séances de l'Académie des Sciences.

PROTHETELY OR SEMI-PUPAL STAGE IN *LOPHEROS FRATERNUS* RAND.

BY H. S. BARBER,

Bureau of Entomology, Washington.

In the August number of *PSYCHE* (Vol. XXI, pp. 126-129) Williams mentions and illustrates an abnormal larva of *Photuris pennsylvanicus* that had developed the pupal wing pads, assigning Kolbe's term prothetely to the phenomenon, and citing the five previous records of this precocious development. Since photographic records of a parallel case in another genus of Malacoderm beetles are at hand they may be useful in close proximity to the above note to which an omitted case of similar nature may be added. Böving¹ 1906 speaks of an abnormal *Donaciid* larva:

"In a cocoon a larva with two large pupa wings on one side of the thorax, and a pupal abdomen was found. There was consequently no appendage, but the head and limbs were that of a larva. At the side of this monster, a cast off, entirely normal skin was lying, with the coverings of both cranium and limbs."

¹Bidrag til kundskaben om *Donaciin*-larveneres naturhistorie, Copenhagen, p. 241. Translated into English 1910, Sonderabd. Int. Rev. Hydrobiol. Hydrograph. p. 101.

In September, 1908, Mr. Schwarz and the writer found several scattered larvæ of *Lopheros fraternus* Rand. under a log on the Virginia shore of the Potomac River near Plummer's Island, Md. Some of these were left in place, the rest being taken to the office for breeding where the abnormally warm condition upset their transformation. Several of them developed wing-pads and all died before spring. But an early spring visit to the log disclosed normal pupæ, with their larval skins, where the few larvæ had been left

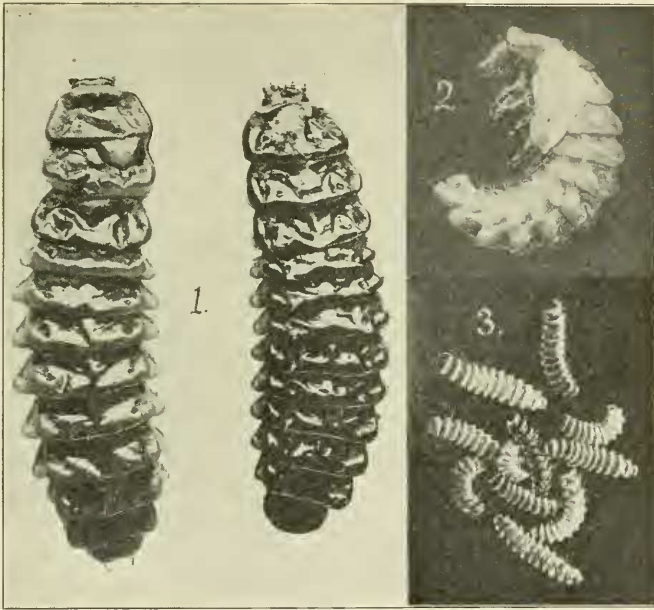


Fig. 1. *Lopheros fraternus* Rand.

1, larvæ x 5; 2, semipupa or prothetelic state x 4; 3, group of larvæ, natural size.

the previous fall and from these adults issued. It was thought at the time that a long period of slow internal change at low temperature was required in preparation for pupation which would be induced by the rise in temperature in the spring, but that the early rise in temperature when the first lot of larvæ were taken to the warm office, had stimulated an attempt at the second operation before the first was completed, causing the abnormal and fatal

development which was then termed a "semi-pupa." It is doubtful if larvæ assuming this state ever successfully develop into adults.

The accompanying illustration shows the dorsal view of the glossy, brown larvæ (enlarged five diameters) a lateral view of the semi-pupa or prothetelic state (four diameters), and a natural size view of the first lot of larvæ.

ASILIDS AND THEIR PREY.

BY STANLEY W. BROMLEY,
Southbridge, Mass.

While collecting insects during the summers of 1912-13 at Southbridge, Mass., I was attracted by the predaceous habits of certain Asilidæ and the apparent partiality of some of the species for Hymenoptera, while others, as for example, *Asilus sericeus*, would almost invariably seize a Lepidopterous insect. To ascertain more fully the feeding habits of the species, I made a special collection of Asilidæ with their prey.

Asa Fitch in his Ninth Report, page 251, pl. 4, fig. 7, refers to what is now called *Promachus fitchii* O. S., as the "Nebraska Bee-killer"—*Trupanea apivora*, stating that he had received it from Nebraska where it was destructive to the honey bee and also to the rose bug. As to robber-flies killing bees, I have not seen them do much damage, but I have never observed them closely in the vicinity of hives. Most of the bees taken were in the field, probably at quite a distance from any apiary. They might, however, become injurious if abundant near a hive, for they always capture their prey on the wing and would undoubtedly seize indiscriminately any bee that came within their range. As the various species of *Vespa* and other Hymenoptera were more plentiful in the fields than the honey bee, these fell victims to the ravenous appetites of the Asilids which preyed also on members of their own family and, indeed, even on those of the same species.

As far as my observations go, there are very few insects that will attack robber-flies. I have seen a species of *Crabro* sting and